

PATENT COOPERATION TREATY

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INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 15082F	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/FI 01/01054	International filing date (day/month/year) 4 December 2001	(Earliest) Priority Date (day/month/year)
Applicant Nokia Corporation et al.		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 2 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of invention is lacking (See Box II).

4. With regard to the title,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No. 2

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

☐ None of the figures.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI 01/01054

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: H04L 1/18, H04Q 7/22

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: H04L, H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-INTERNAL, WPI DATA, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 0160016 A1 (NOKIA MOBILE PHONES LTD), 16 August 2001 (16.08.01) --	1-18
A	3rd Generation Partnership Protect; Technical Specification Group Radio Access Network; Packet Data Convergence Protocol (PDCP) Specification. 3G TS 25.323 V3.6.0 (2001-09) --	1-18
A	EP 1077559 A1 (TELEFONAKTIEBOLAGET LM ERICSSON), 21 February 2001 (21.02.01), abstract -- -----	1-18

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier application or patent but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- "&" document member of the same patent family

Date of the actual completion of the international search

10 July 2002

Date of mailing of the international search report

19 -07- 2002

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INTERNATIONAL SEARCH REPORT
Information on patent family members

10/06/02

International application No.

PCT/FI 01/01054

Patent document cited in search report			Publication date	Patent family member(s)		Publication date
WO	0160016	A1	16/08/01	AU	3552401 A	20/08/01
				FI	4769 U	27/12/00
				FI	20000314 A,V	15/08/01
				FI	20001792 A	15/08/01
				US	2001017850 A	30/08/01

EP	1077559	A1	21/02/01	AU	7271900 A	13/03/01
				EP	1203472 A	08/05/02
				NO	20020753 A	09/04/02
				WO	0113587 A	22/02/01

(19) World Intellectual Property Organization
International Bureau



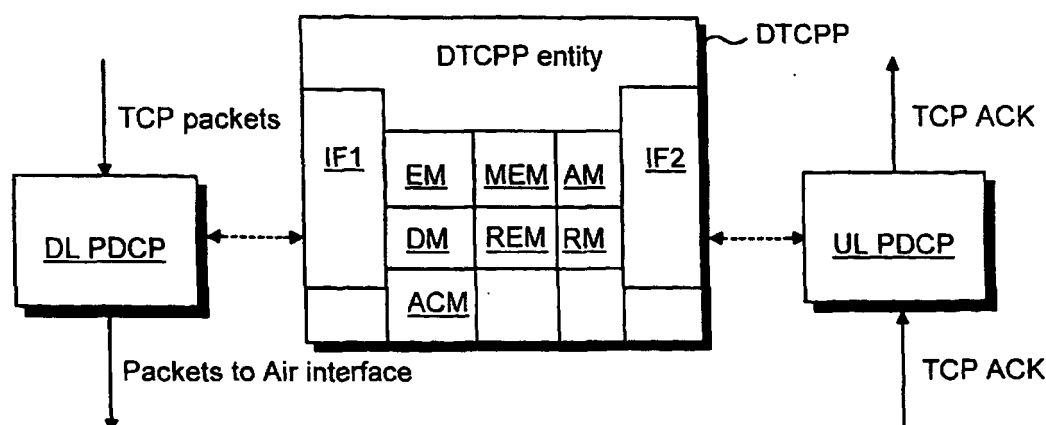
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- (71) Applicant (for all designated States except US): **NOKIA CORPORATION** [FI/FI]; Keilalahdentie 4, FIN-02150 Espoo (FI).
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- (81) Designated States (national): AE, AG, AL, AM, AT (utility model), AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ (utility model), CZ, DE (utility model), DE, DK (utility model), DK, DM, DZ, EC, EE (utility model), EE, ES, FI (utility model), FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK (utility model), SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW.
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- Published:**
— with international search report
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(54) Title: METHOD AND SYSTEM FOR DISPATCHING MULTIPLE TCP PACKETS FROM COMMUNICATION SYSTEMS



(57) **Abstract:** The present invention relates to mobile telecommunication systems. The present invention overcomes the problem of unnecessary retransmissions over the air interface. These retransmissions waste the capacity of the air interface. In a preferred embodiment, a Discarding TCP Packets (DTCPP) entity is added to the PDCP layer. The DTCPP entity has the knowledge of the correspondence between the PDCP sequence numbering and the TCP segments sequence numbering correspondence. Further, The DTCPP entity has the knowledge of which TCP segments have been successfully received by the TCP-UE. This knowledge can be gained reading the TCP acknowledgements at the UL PDCP, where the sequence number of the correctly received byte is stated. The present invention describes a method and system for avoiding multiple transmissions of the same TCP segment.